

## Deployable Composite Structures, Phase II

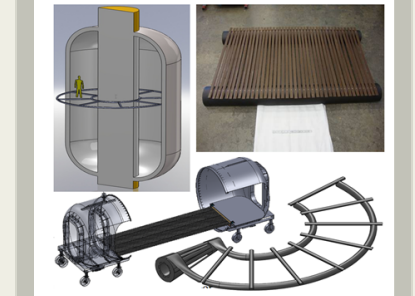
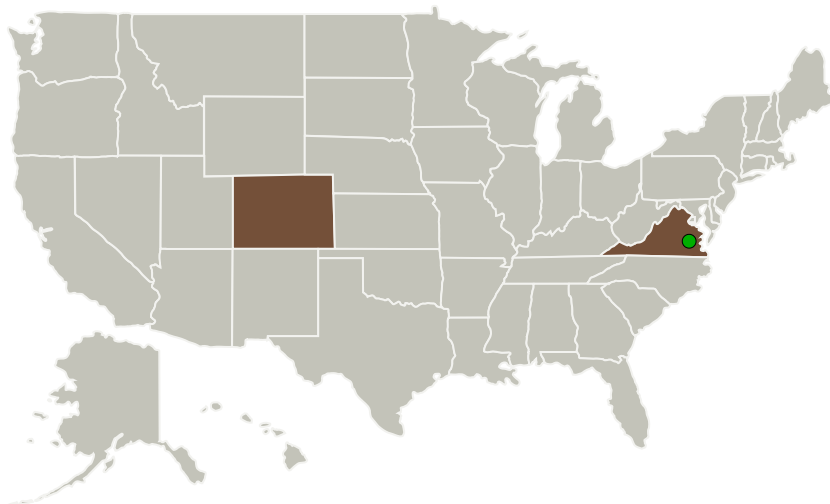
Completed Technology Project (2012 - 2014)



## Project Introduction

NASA is seeking innovative structure technologies that will advance expandable modules for orbital and surface based habitats. These secondary structures must increase utilization of the primary pressurized volumes by accommodating hardware, experiments, storage space, and cable routing. The expandable structures must use minimal launch mass and volume, be easy to install, and maximize operational volume and structural performance in a crewed or material transfer pressure vessel. Utilizing unique materials and innovative mechanical designs, CTD has created a new class of deployable structures for increasing the utility of inflatable habitats. These new concepts are referred to as Composite Rollable Extendible Slit-Tube Structures, or CRESTS. CRESTS can provide room divisions or load bearing floors and provide mounting for racks, storage and cabling. CRESTS are stowed by rolling slit-tube beams, lateral support battens, and floor or wall surfaces into a single compact tube. CRESTS have been designed for linearly expanding lunar modules and for toroidal inflatable orbital habitats. CRESTS are elastically strained deployable composites that provide a positive deployment force and an inherent geometric lock-out to occur once the deployment is complete. This technology can address the challenges within this application of being lightweight, yet rigid.

## Primary U.S. Work Locations and Key Partners



Deployable Composite Structures

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Organizations Performing Work	Role	Type	Location
Composite Technology Development, Inc.	Lead Organization	Industry	Lafayette, Colorado
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Colorado	Virginia

## Project Transitions

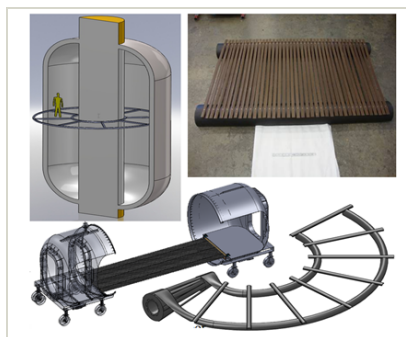
▶ **April 2012:** Project Start

✓ **April 2014:** Closed out

**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138001>)

## Images

**Project Image**

Deployable Composite Structures  
(<https://techport.nasa.gov/image/130855>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Composite Technology Development, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Robert M Taylor

**Co-Investigator:**

Robert F Taylor

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### Technology Maturity (TRL)

Start: **3**  
Current: **4**  
Estimated End: **4**



### Technology Areas

#### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.2 Structures
    - └ TX12.2.1 Lightweight Concepts

### Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System